Manitoba
Agriculture
and Food

Budget Guidelines for a 115 Cow Dairy Enterprise

Based on 100 Kgs of Daily Butterfat (BF) Quota

formation Update

www.gov.mb.ca/agriculture/

Date: January 2002

The primary objective of this publication is to provide a budget format for determining costs to operate a dairy enterprise. The case herd used in this budgeting guide is larger than average and of a freestall/parlour design; however, th[illegible]geting format can be applied to any Manitoba dairy. Adjustments to this guide due to herd size, production level and facility type will be necessary when applying the cost figures to more accurately reflect your enterprise.

A major change in the format of this budget was the creation of two separate "Budget Guidelines". They include:"Budget Guidelines for a 115 Cow Dairy Enterprise Based on 100 kgs of Daily Butterfat (BF) Quota" and "Budget Guidelines for Raising Dairy Replacement Heifers". For the purpose of the dairy enterprise budgeting guideline, all male and female calves born are credited to the dairy at current market values. These values are transferred as costs to the heifer enterprise and become cost components in the dairy heifer budgeting guide. Re-entry of heifers to the dairy herd as milking two-year olds is then expensed to the dairy at current market values.

In addition to the hard copy budgeting guidelines for both a dairy enterprise and raising replacement heifers, an Excel spreadsheet program of each is available free and can be downloaded from the Manitoba Agriculture and Food web site.

All feeds including forages, concentrates and supplements are priced at current market values. By doing this, consistency is maintained in how key inputs (i.e. feeds; replacement heifers) are expensed and included in the dairy budget. The cost figures listed in this budget guideline are estimates based on accepted industry practices and current market conditions.

Disclaimer: This budget is only a guide and is not intended as an in-depth study of the cost of production of the Manitoba dairy industry. Interpretation and utilization of this information is the responsibility of the user. No liability for decisions based on this publication is assumed. If you require assistance with developing your individual budget, please contact your local MAF Farm Management Specialist, Regional Dairy Specialist or Regional Engineer.

Summary of Dairy Production Costs - 2002

A. Operating Costs	$/COW	$/HL	Your Farm
1. Feed Costs:			
1.01 Lactating Cows			
1.011 TMR Silage	$476.16	$5.60	
1.012 TMR Grain Mix	$624.96	$7.35	
1.013 TMR Salt,Min & Vitamins	$44.76	$0.53	
1.02 Dry Cows			
1.021 Far Away	$66.72	$0.78	
1.022 Close Up	$27.58	$0.32	
Total Feed Cost	**$1,240.18**	**$14.58**	
2. Other Operating Costs:			
2.01 Milk Recording & Registrations	$48.79	$0.57	
2.02 Bedding	$37.50	$0.44	
2.03 Vet. Medicine & Supplies	$134.85	$1.59	
2.04 Breeding Costs	$88.00	$1.04	
2.05 Dairy Supplies	$104.35	$1.23	
2.06 Marketing & Transportation	$297.59	$3.50	
2.07 Operating, Repair & Maintenance	$183.22	$2.16	
2.08 Utilities	$128.70	$1.51	
2.09 Insurance	$76.74	$0.90	
2.10 Manure Removal	$78.26	$0.92	
2.11 Herd Replacement	$123.48	$1.45	
2.12 Administrative Costs	$43.48	$0.51	
2.13 Property Taxes	$87.57	$1.03	
2.14 Miscellaneous	$20.87	$0.25	
Subtotal Operating Costs	$2,693.58	$31.68	
2.15 Operating Interest	$6.73	$0.08	
Total Operating Costs	**$2,700.31**	**$31.76**	
B. Fixed Costs			
3. Depreciation			
3.01 Buildings & Storage	$382.91	$4.50	
3.02 Machinery & Equipment	$90.53	$1.07	
4. Investment			
4.01 Land, Buildings & Storage	$182.31	$2.14	
4.02 Machinery & Equipment	$26.02	$0.31	
4.03 Livestock	$100.00	$1.18	
Total Fixed Costs	**$781.77**	**$9.20**	
TOTAL OPERATING AND FIXED COSTS	**$3,482.08**	**$40.96**	
C. Labour Cost	**$780.00**	**$9.18**	
TOTAL COST OF PRODUCTION	**$4,262.08**	**$50.14**	

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Assumptions

A. Herd Management Profile

Breed of Herd	**Holstein**	
Herd Identification	**Registered**	
On a DHI Milk Recording Program	**Yes**	
Herd Size:		
Total Lactating & Dry	**115**	Cows
Lactating Cows	**100**	Cows
Dry Cows	**15**	Cows
Milking Herd Composition:		
1st Lactation Animals (26% of herd)	**30**	Cows
2nd Lactation+ Animals (74% of herd)	**85**	Cows
Daily Kgs BF Quota Holding:		
Kgs BF for the herd	**100.0**	Kgs
Kgs BF/Lactating Cow	**1.0**	Kgs
Performance Statistics for Milking Herd:		
Litres Milk/Cow/310-day lactation	**8,500**	Litres
Kgs BF/Cow/310-day lactation	**319**	Kgs
Kgs BF/hl Milk	**3.75**	Kgs
Kgs Protein/hl Milk	**3.30**	Kgs
Average Calving Interval	**12**	Months
Average Days Dry	**55**	Days
Average Milk Bacteria Count (PLC)	**<7,500**	
Average Milk Somatic Cell Count (SCC)	**<150,000**	
Average Dry Cow Bodyweight (lbs)	**1,485**	lbs
Average Lactating Cow Bodyweight (lbs)	**1,375**	lbs
Other Herd Management Parameters:		
Regular Herd Health Program	**Yes**	
Complete Herd Vaccination Program	**Yes**	
Average % Culling Rate on Milking Herd	**30.0%**	
Average Death Loss % on Milking Herd	**4.0%**	
Calving %	**95.0%**	
Market Value of Animals:		
Average Value of Milking Herd	**$2,500**	
Average Value of Replacement Stock	**$2,000**	
Average Value of Cull Cows (slaughter & dairy)	**$800**	
Average Value of Heifer Calves at 2 weeks	**$400**	
Average Value of Bull Calves at 2 weeks	**$200**	

B. Feed Requirements and Costs

Based on a 12-month calving interval (CI) comprised of a 310-day lactation period and a 55-day dry period.

Feed requirements and feed cost of production guideline calculations are based on meeting the nutrient requirements of a herd with an 8,500 L/cow milk production average (or 27.5 L/day). A single total mixed ration (TMR) was balanced and fed for a production level 30% higher than the herd average daily production.

Nutrient Description of Forage

	Lactating Cows	Dry Cows
Dry Matter	40 %	85 %
Net Energy of Lactation	1.45 Mcal/kg	1.25 Mcal/kg
Total Digestible Nutrients	64 TDN	57 TDN
Crude Protein	20 CP	12 CP
Acid Detergent Free	30 ADF	40 ADF
Neutral Detergent Free	40 NDF	55 NDF
Relative Feed Value	150 RFV	100 RFV

Approximate dry matter (DM) equivalents for hay, legume silage and corn silage

	1.0 tonne of 85% DM hay @	$85.00 tonne
=	2.1 tonne of 40% DM legume silage @	$40.00 tonne
=	2.4 tonne of 35% DM corn silage @	$35.00 tonne

Lactating Cows: assuming a body weight of 1375 lbs producing 8500 L milk/lactation with a composition of 3.75 kgs BF, 3.30 kgs Protein and 9.00 kgs Solids Non-Fat (SNF)/hl of milk.

Lactating Cows	$/kg	$/tonne	Kgs Consumed Per Cow/Day	Days on Feed	TMR Storage Loss %	TMR Storage Loss %
TMR Silage		$40	33.4	310	5	10
TMR Grain Mix		$160	12.0	310	5	0
TMR Salt, Min & Vit	$0.55	$550	0.25	310	5	0
		$74.34	45.7			

Dry Cows: Average body weight of 1485 lbs with a dry period length of 55 days.

Far Away Dry Cows (from drying off to 16 days before calving)

	$/kg	$/tonne	Kgs Consumed Per Cow/Day	Days on Feed	Storage/ Feeding Loss %
Forage (Hay)		$80	13.0	40	20
Dry Cow Grain Mix		$210	2.0	40	0

Close-Up Dry Cows (from 15 days prior to calving up to calving)

	$/kg	$/tonne	Kgs Consumed Per Cow/Day	Days on Feed	Storage/ Feeding Loss %
Forage (Hay)		$80	4.0	15	20
Dry Cow Grain Mix		$210	4.2	15	0
TMR Lactating Ration		$74.34	7.0	15	10

C. Replacement Cost

	Heifers	Bulls
Calves Born	55	55
Transfer % to Heifer Enterprise	100.0%	100.0%
Mortality on Calves	4.0%	4.0%
Available for sale	53	53
Calf Value	$400	$200

Milk Herd Culling Rate (includes 4% death loss)	30.0%
Death Loss on Milk Herd	4.0%
Cull Cows sold (dairy & slaughter)	30
Value of Cull Cows sold for dairy & slaughter	$800.00

D. Herd Health and Veterinary Medicine

The herd is enrolled on a scheduled herd health veterinary program with reproductive and routine health screening done each month.

Drugs, vaccines, vet supplies	$6,000.00
Regular Herd Health Program	
Total Hours/Visit	3.00
Number of Yearly Visits	12
Charge per Hour	$90.00
Mileage allowance per kilometer	$1.20
Emergency Calls, Surgeries & Hoof Trimming	$4,000.00
Number of Yearly Visits	12
Mileage allowance per kilometer	$1.95
Total Kilometers (one way trip)	60

DAIRY COST OF PRODUCTION WORKSHEET

A. OPERATING COSTS

				Your Farm
1. Feed Costs:				
1.01 Lactating Cows				
1.011 TMR Silage				
		33.4	kgs silage consumed/cow/day	
	+	1.7	kg TMR silage wastage loss	
	+	3.3	kg TMR silage storage loss	
	x	310	days on silage	
	+	1000	kgs/tonne	
	x	$40.00	/tonne	
	=	**$476.16**	**/cow/year**	
1.012 TMR Grain Mix				
		12.0	kgs grain mix/cow/day	
	+	0.6	kg TMR grain mix wastage loss	
	x	310	days on grain mix	
	+	1000	kgs/tonne	
	x	$160.00	/tonne	
	=	**$624.96**	**/cow/year**	
1.013 Salt, Min & Vitamins				
		0.25	kgs salt,min,vit/cow/day	
	+	0.0125	kg TMR salt/min/vit wastage loss	
	x	310	days on salt,min,vit	
	x	$0.55	$/kg	
	=	**$44.76**	**/cow/year**	
1.02 Dry Cows				
1.021 Far Away Dry Cow				
Forage		13.0	kgs forage consumed/cow/day	
	+	2.6	kg storage/wastage loss	
	x	40	days on forage	
	+	1000.0	kgs/tonne	
	x	$80.00	/tonne	
	=	**$49.92**	**/cow/year**	

Dry Cow Grain Mix		2.0	kgs dry cow grain mix/cow/day	
	+	0.00	kg storage/wastage loss	
	x	40	days on grain mix	
	+	1000.0	kgs/tonne	
	x	$210.00	/tonne	
	=	**$16.80**	**/cow/year**	
Total	=	**$66.72**	**/cow/year**	

1.022 Close Up Dry Cow

Forage		4.0	kgs forage consumed/cow/day	
	+	0.80	kg storage/wastage loss	
	x	15	days on forage	
	+	1,000	kgs/tonne	
	x	$80.00	/tonne	
	=	**$5.76**	**/cow/year**	
Dry Cow Grain Mix		4.2	kgs dry cow grain mix/cow/day	
	+	0.00	kg storage/wastage loss	
	x	15	days on grain mix	
	+	1,000	kgs/tonne	
	x	$210.00	/tonne	
	=	**$13.23**	**/cow/year**	

TMR Lactating Ration

		7.0	kgs TMR mix/cow/day	
	+	0.70	kg storage/wastage loss	
	x	15	days on grain mix	
	+	1,000	kgs/tonne	
	x	$74.34	/tonne	
	=	**$8.59**	**/cow/year**	
Total	=	**$27.58**	**/cow/year**	

2. Other Operating Costs:

2.01 Milk Recording & Registration (Publishable (P) 10 AP; 2 hours/milking)

With each cow having a dry period of 6 to 8 weeks, this budget assumes that all cows will receive 9 of the 10 DHI tests conducted per year.

herd fee	+	$200.00	semi annual fee $100 x 2	_____
call fee	+	$458.20	call fee $45.82 x 10 tests	_____
milking cow fee	+	$2,432.25	9 tests x 115 cows x $2.35/cow	_____
hourly fee	+	$520.00	10 tests x 2 hours x $26/hour	_____
SCC fee	+	$310.50	9 tests x 115 cows x $0.30/cow	_____
registration fee	+	$1,610.00	$14/head x 115 cows	_____
association fee	+	$80.00	breed association fee	_____
	÷	115	milking cows	_____
	=	**$48.79**	**/cow/year**	_____

2.02 Bedding

		1.25	tonnes/cow/year	_____
	x	$30.00	/tonne	_____
	=	**$37.50**	**/cow/year**	_____

2.03 Veterinary Medicine & Supplies

Drugs/Vaccines/ Vet Supplies		$6,000.00	total for herd	_____
Herd Health		$90.00	/hour charge	_____
	x	36	hours (12 visits x 3 hrs/visit)	_____
	=	$3,240.00	total for herd	_____
Mileage(Herd Health)		$1.20	rate/km	_____
	x	60	kilometers (one way)	_____
	x	12	visits	_____
	=	$864.00	total for herd	_____
Emergency Calls	=	$4,000.00	total for herd	_____
Mileage (Emergency)		$1.95	rate/km	_____
	x	60	kilometers (one way)	_____
	x	12	visits	_____
	=	$1,404.00	total for herd	_____
Total	=	$15,508.00	sum of sub-totals	_____
	÷	115	milking cows	_____
	=	**$134.85**	**/cow/year**	_____

2.04 Breeding Costs

Semen		$25.00	/vial of semen
	x	2.0	services/conception
	=	$50.00	/cow/year
Services		$19.00	/visit service charge
	x	2.0	services/conception
	=	$38.00	/cow/year
Total	**=**	**$88.00**	**/cow/year**

2.05 Dairy Supplies

	$12,000.00	total yearly cost
÷	115	milking cows
=	**$104.35**	**/cow/year**

2.06 Marketing & Transportation

	$2.10	transportation ($/hl)
+	$0.554	MMP admin ($/hl)
+	$0.817	product promo ($/hl)
+	$0.030	DHI fee ($/hl)
=	$3.501	/hl
x	85.0	hl/cow
=	**$297.59**	**/cow/year**

2.07 Operating, Maintenance & Repairs

	$6,000.00	annual fuel costs
+	$9,630.00	building repairs,mtnce 1%
+	$5,440.00	machinery repairs,mtnce 4 %
÷	115	milking cows
=	**$183.22**	**/cow/year**

2.08 Utilities

	$13,000.00	hydro
+	$1,800.00	telephone
÷	115	milking cows
=	**$128.70**	**/cow/year**

2.09 Insurance

Building & Equipment

$1,024,000	invest in bldg & equip	
+ $100.00	units of $100	
x $0.50	insurance rate/$100	
÷ 115	milking cows	
= $44.52	/cow/year	

Herd

$2,500	/cow average value	
+ $100.00	units of $100	
x $0.40	insurance rate/$100	
= $10.00	/cow/year	

Business Interruption

$57.00	$/hl	
x 85	hl/cow	
+ 100	units of $100	
x $0.45	insurance rate/$100	
= $21.80	/cow/year	

Liability

$48.00	additional coverage	
÷ 115	milking cows	
= $0.42	/cow/year	

Total	=	**$76.74**	**/cow/year**

2.10 Manure Removal

$9,000.00	annual removal cost	
÷ 115	milking cows	
= **$78.26**	**/cow/year**	

2.11 Herd Replacement

Purchases

$2,000.00	heifer market value	
x 35	# of heifers purchased	
= $70,000.00	total heifer cost	

Cull revenues

$800.00	cull cow value	
x 30	# of cows culled	
= $24,000.00	total	

Bull Sales		$200.00	bull calf value
	x	53	# of bull calves sold
	=	$10,600.00	total
Heifer sales		$400.00	heifer calf value
	x	53	transferred to heifer enterprise
	=	$21,200.00	total
		$70,000.00	total purchase cost
	-	$55,800.00	total sales
	=	$14,200.00	net replacement cost
	÷	115	milking cows
Total	=	**$123.48**	**/cow/year**

2.12 Administrative Costs

		$5,000.00	total admin. costs
	÷	115	milking cows
	=	**$43.48**	**/cow/year**

2.13 Property Taxes

		$963,000	building value
	x	30.0%	percent taxed
	x	0.031201	mill rate
	÷	115	milking cows
	=	$78.38	/cow/year
		$60,000.00	house value
	x	45.0%	percent taxed
	x	0.039151	mill rate
	÷	115	milking cows
	=	$9.19	/cow/year
Total	=	**$87.57**	**/cow/year**

2.14 Miscellaneous (small tools, hardware,etc.)

		$2,400.00	total cost
	÷	115	milking cows
	=	**$20.87**	**/cow/year**

2.15 Operating Interest (Operating Interest is paid monthly on one-half of the subtotal operating cost.)

	$2,693.58	subtotal operating costs	
÷	12	months	
÷	2	average	
x	6.0%	interest rate	
=	**$6.73**	**/cow/year**	

Capital Costs Buildings & Equipment Assumed New for a 115 Cow Herd

Buildings & Storage	
Land - Assumed 10 acres @ $500/acre.	$5,000
Barn - 120 Stall Freestall Barn (86 ft x 139 ft) fully equipped (including site excavation, concrete, shell, electrical, ventilation, automatic scrapers, manure pump, water). 120 stalls @ $2,500/stall	$300,000
Milking Parlour - Double 8 Parallel Parlour (56 ft x 76 ft) & milkhouse fully equipped (site excavation, concrete, shell, electrical, water, milkers, vacuum pump, automatic crowd gates, automatic take-offs, milk meters, complete fencing for holding area)	$375,000
Dry Cow/Heifer Facility - includes open front loafing shed (32x48x12), sloping concrete apron, 16 ft gates, 2 water drinkers, hydro, manure storage, fenceline concrete bunker, loading chute.	$40,000
Earthen Manure Storage - 12 month capacity	$60,000
Bulk Tank - (3,000 U.S. gallon) and compressor completely installed.	$50,000
Bunker Silo - (130' x 75' x10')	$95,000
Hay Shed - (50' x 64')	$18,000
Steel Grain Bin	$20,000
Total Buildings	**$963,000**
Barn Equipment	
Portable Mixer Wagon	$35,000
Roller Mill	$6,000
Other Equipment	$20,000
Total Equipment	**$61,000**
Machinery	
Truck (dairy portion)	$25,000
Tractor (dairy portion)	$50,000
Total Machinery	**$75,000**
Total Building, Equipment, Machinery	**$1,099,000**
Dairy Cow Herd Investment	**$287,500**
Total Capital Investment	**$1,386,500**

B. FIXED COSTS

3. Depreciation:

$$\frac{\text{Original Cost - Salvage Value}}{\text{Useful Life}}$$

3.01 Buildings:

Barn		$300,000.00	original value	
	-	$30,000.00	salvage value	
	+	20	years useful life	
	÷	115	cows	
	=	$117.39	/cow/year	
Milking Parlour		$375,000.00	original value	
	-	$37,500.00	salvage value	
	+	20	years useful life	
	÷	115	cows	
	=	$146.74	/cow/year	
Dry Cow/Close Up Heifer Facility				
		$40,000	original value	
	-	$4,000	salvage value	
	+	20	years useful life	
	÷	115	cows	
	=	$15.65	/cow/year	
Manure Storage		$60,000.00	original value	
	-	$0.00	salvage value	
	+	25	years useful life	
	÷	115	cows	
	=	$20.87	/cow/year	
Bulk Tank		$50,000.00	original value	
	-	$5,000.00	salvage value	
	+	15	years useful life	
	÷	115	cows	
	=	$26.09	/cow/year	

Bunker Silo		$95,000.00	original value
	-	$0.00	salvage value
	+	20	years useful life
	÷	115	cows
	=	$41.30	/cow/year
Hay Shed		$18,000.00	original value
	-	$1,800.00	salvage value
	+	20	years useful life
	÷	115	cows
	=	$7.04	/cow/year
Steel Bins		$20,000.00	original value
	-	$2,000.00	salvage value
	+	20	years useful life
	÷	115	cows
	=	$7.83	/cow/year
Total	**=**	**$382.91**	**/cow/year**

3.02 Other Equipment & Machinery

Barn Equipment		$61,000.00	original value
	-	$6,100.00	salvage value
	+	15	years useful life
	÷	115	cows
	=	$31.83	/cow/year
Machinery		$75,000.00	original value
	-	$7,500.00	salvage value
	+	10	years useful life
	÷	115	cows
	=	$58.70	/cow/year
Total	**=**	**$90.53**	**/cow/year**

4. Investment:

$$\frac{\textit{Original Cost + Salvage Value}}{2} \times \textit{Investment Rate}$$

4.01 Buildings:

Land		$5,000	total value	
	x	4.0%	investment rate	
	÷	115	cows	
	=	$1.74	/cow/year	
Barn		$300,000.00	original value	
	+	$30,000.00	salvage value	
	+	2	average	
	x	4.0%	investment rate	
	÷	115	cows	
	=	$57.39	/cow/year	
Milking Parlour		$375,000.00	original value	
	+	$37,500.00	salvage value	
	+	2	average	
	x	4.0%	investment rate	
	÷	115	cows	
	=	$71.74	/cow/year	
Dry Cow/Close Up Heifer Facility				
		$40,000	original value	
	+	$4,000	salvage value	
	+	2	average	
	x	4.0%	investment rate	
	÷	115	cows	
	=	$7.65	/cow/year	
Manure Storage		$60,000.00	original value	
	+	$0.00	salvage value	
	+	2	average	
	x	4.0%	investment rate	
	÷	115	cows	
	=	$10.43	/cow/year	

Bulk Tank		$50,000.00	original value	
	+	$5,000.00	salvage value	
	+	2	average	
	x	4.0%	investment rate	
	÷	115	cows	
	=	$9.57	/cow/year	
Bunker Silo		$95,000.00	original value	
	+	$0.00	salvage value	
	+	2	average	
	x	4.0%	investment rate	
	÷	115	cows	
	=	$16.52	/cow/year	
Hay Shed		$18,000.00	original value	
	+	$1,800.00	salvage value	
	+	2	average	
	x	4.0%	investment rate	
	÷	115	cows	
	=	$3.44	/cow/year	
Steel Bins		$20,000.00	original value	
	+	$2,000.00	salvage value	
	+	2	average	
	x	4.0%	investment rate	
	÷	115	cows	
	=	$3.83	/cow/year	
Total	=	**$182.31**	**/cow/year**	

4.02 Equipment & Machinery:

Barn Equipment		$61,000.00	original value	
	+	$6,100.00	salvage value	
	+	2	average	
	x	4.0%	investment rate	
	÷	115	cows	
	=	$11.67	/cow/year	

Machinery		$75,000.00	original value	_____
	+	$7,500.00	salvage value	_____
	+	2	average	_____
	x	4.0%	investment rate	_____
	+	115	cows	_____
	=	$14.35	/cow/year	_____
Total	=	**$26.02**	**/cow/year**	_____

4.03 Livestock:

	$2,500.00	average value/cow	_____
x	4.0%	investment rate	_____
=	**$100.00**	**/cow/year**	_____

C. Labour:

	60	hours/cow/year	_____
x	$13.00	/hour	_____
=	**$780.00**	**/cow/year**	_____

For more information, contact your local Manitoba Agriculture and Food office.

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